PECKHAM (ADELAIDE W—)

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BY

ADELAIDE WARD PECKHAM, M.D.,

OF PHILADELPHIA.

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FROM

THE MEDICAL NEWS,

February 11, 1893.

[Reprinted from THE MEDICAL NEWS, February 11, 1893.]

STUDY OF A CASE OF ERYSIPELAS GENITALIUM DUE TO THE USE OF INFECTED OINTMENT.[1]

BY ADELAIDE WARD PECKHAM, M.D.,
OF PHILADELPHIA.

M. D., born October 7, 1892, was a plump, healthy babe, with fair, sound skin. The navel healed quickly. The mother seemed free from disease, convalesced without rise of temperature, and there was a history of preceding normal pregnancies.

On November 12th, five weeks from the date of birth, I saw the child after an illness of twenty-four hours. The mother said that for a slight "chafing" of the genitalia she had applied an ointment that she had in the house, and that during the following day and night the child had become alarmingly ill.

On inquiry, the mother stated that the ointment had been used by a woman in the family on a suppurating gland in the neck, application having been made by dipping the fingers in the ointment. This woman gave a history of having fallen through a hatchway, striking the side of the neck upon a projection in the wall; a large abscess had formed, which suppurated very freely, leaving a long and angry-looking cicatrix.

On examining the child, the following conditions were found: Temperature, 103.8° F.; pulse full and very rapid, all food vomited, bowels constipated,

[1] From the Laboratory of Hygiene, University of Pennsylvania.

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extremities cold, convulsive twitchings of the muscles of the face and limbs, fingers and toes flexed, the pupils contracted. The child was in a state of coma. Locally there was a small excoriation on the left labium, intense redness and swelling of the skin over the pubic region, which was sharply defined, and did not extend to the anus. On November 13th, the second day, the erythema had extended to the anus and creases of the thighs; the labia were so infiltrated that the skin seemed tense enough to rupture; the temperature was 103.4° F. On November 14th, the inflammation had extended over the lower third of the abdomen and lower half of the back, making a shining, inflamed surface so sensitive that the child had a slight spasm when moved; temperature still 103.4° F. On November 15th, there was no extension of inflammation upward, but it had reached the left knee and halfway down the thigh on the right side, the parts being swollen to nearly twice the normal size; the skin over the genitalia was slightly paling; temperature, 103° F. On November 17th, both legs were very much swollen, and of a dusky-red color. The convulsive movements and insomnia, which had lessened, returned again; the tongue was coated; there was intense thirst and slight diarrhea. The temperature was now 102.4° F. On November 22d, the right foot was swollen, the inflammation on the right side reaching a point two days later than on the left; the cuticle was flaking on the parts first attacked, and on the labia it came off in casts; temperature, 99°. On November 25th, the left foot was nearly normal, and the right improving; temperature, 99° F. On November 29th, there was noticed a swelling on the top of the left foot, and another on the inner malleolus of the right ankle showed beginning abscess-formation: there was also

edema of the left labium. The temperature was normal. On December 2d, there was slight cough, the first symptom of the broncho-pneumonia that followed. Both abscesses were lanced. On December 8th, the respirations increased in frequency, and an area of dulness was found by percussion on the right side posteriorly; large and small mucus râles were heard over both lungs; there were frequent spells of coughing, with cyanosis around the mouth and nose, relieved by vomiting. On December 13th, another large abscess on the right ankle and a small one on the top of the left foot were lanced. A swelling, the size of a walnut, was found in the anterior axillary line between the fifth and sixth ribs. On December 14th, the rattling respiration and severe cough still continued. The skin over the abscess on the chest began to redden, and the temperature was 100° F. Two small abscesses were lanced, one on each foot. On December 18th, an abscess on the chest was lanced; the lungs were much clearer.

The left leg was red and swollen to the knee on December 21st. The temperature was 100° F. The redness of the leg had disappeared on December 23d, and a swelling involving two lymphatic glands was found in the left groin; these two glands coalesced into a single abscess-cavity. On December 24th, an abscess in the groin was lanced, and two ounces of pus were discharged. On December 26th, an abscess was forming under the right knee, and two enlarged glands were found in the left axilla. On December 27th, the abscess under the knee was lanced; temperature, 99.2° F. On December 30th, the incision made under the knee had become occluded by the dressing; temperature 106° F., but it fell to 101.2° F. in three hours after drainage was reëstablished. A gland in the left groin was much enlarged.

On December 31st, the temperature was 100.1° F. A small abscess on the left ankle was lanced. On January 18th, two abscesses in the left axilla and one in the right groin were lanced.

During the whole period of abscess-formation the temperature seemed remarkably low. The test was made at different hours and on each day, and at no time did the temperature exceed 99° F., with the exception mentioned in the history.

Treatment.—During the first forty-eight hours hot fomentations were appl ed to the inflamed parts. Calomel, $\frac{1}{12}$ gr., with 2 grains of sodium bicarbonate was given every hour until the bowels moved. An ointment containing one dram each of ichthyol and zinc oxid to an ounce of cosmolin was used during the remainder of the attack of erysipelas. During the pyemia, brandy and syrup of iron chlorid were given in suitable doses, and elixir of calisaya whenever there was rise of temperature.

BACTERIOLOGIC STUDY OF THE CASE.

The following experiments were made with the blood, pus, and sputum taken from the child, and with the ointment used during the first twenty-four hours of its illness. The latter was that variety of petroleum ointment named "Lucilline."

EXPERIMENT I.—On November 16th, from the advancing margin of the disease on the leg two drops of blood were drawn by puncture with a sterilized needle, the skin having previously been thoroughly washed in a solution of carbolic acid of approximately 2 per cent. strength. From the drops of blood six slanting tubes of nutrient glycerin agar-agar were inoculated by smearing the blood upon the surface of the culture-medium with a

sterilized platinum-wire needle. These tubes were placed in the incubator for twenty-four hours; they then showed a growth of isolated colonies differing in size and color, a pin-point pearly growth being very plentiful. From the different colonies on these tubes a series of Petri plates, four in number, was made, and from single colonies on these plates tubes were inoculated, and pure cultures obtained. By their growth on different media, and by microscopic examination of cover slip preparations, these proved to be the streptococcus erysipelatis, the staphyloccus pyogenes aureus, and a nondescript bacillus.

Experiment II.—Inoculations were made from the ointment by smearing fifteen tubes of glycerin agar agar with it, using the amount taken up in a looped platinum wire for each tube. Mixed growths were found on twelve tubes after exposure to a temperature of 37° C. for twenty-four hours. Petri plates were made as before, and from single colonies pure cultures of a streptococcus and the bacillus pyogenes fluorescens were obtained.

Macroscopic comparison was then made of the streptococci obtained from these two sources, regarding their growth on different media and their reactions. Two sets of tubes of the different kinds of media were inoculated, the one with the streptococcus from the child, the other with that from the ointment. The inoculations were made in the same hour and kept in the incubator an equal length of time. The streptococci from both sources were found to be identical in every respect, and we feel justified in thinking the streptococcus in the ointment to be the streptococcus erysipelatis. It presented the following characteristics:

On Petri plates of ordinary nutrient agar-agar, glycerin agar-agar, and gelatin, pin-point, pearly-

white colonies are found, which under a low power of the microscope are round, finely granular, of a yellowish-brown color, with even edges. Smears on agar-agar, glycerin-agar and gelatin, show macroscopically a delicate, pearly growth, with many isolated colonies, growing most luxuriantly on glycerin agar-agar, and least on gelatin. They do not liquefy gelatin. On potato the growth is invisible, but after a short time there is an increase of moisture about the point at which the organisms were deposited. In neutral or slightly alkaline litmus milk it causes a very faint pink color in twenty-four hours; this change in color is not due, apparently, to any production of acid, as the reaction of the milk, even when this color is present, is shown by litmus and curcuma paper to be slightly alkaline, and remains so for several weeks. In none of a number of experiments bearing on this point was there any coagulation of the milk, or any deviation from the change in the reaction described. In deep stab-cultures (8 cm. deep) there is a growth along the entire track of the needle, as well as upon the surface. This growth is most luxuriant at the temperature of the incubator, 37° C., and also develops, but less rapidly, at ordinary room-temperature. This organism stains readily with the ordinary anilin dyes.

Microscopic examination of fresh cultures, especially in bouillon, show the cocci arranged in long chains. Similar long chains are also to be found in blood-serum cultures; upon other solid media chains are likewise to be found, but they are usually shorter.

Experiment III. — Experiments upon animals gave the following results:

Two rabbits were inoculated, one intra-venously, the other by scarification on the ear, with pure cul-

tures of the streptococcus of the fifth generation. An area of slight inflammation found at the point of inoculation on the third day soon disappeared, and no further result was obtained. Two rabbits were again inoculated in the same manner with a culture of the first generation. The experiment proved negative.

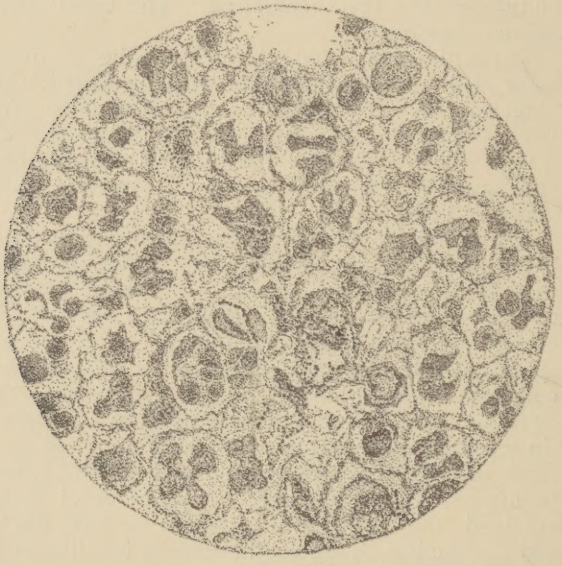
EXPERIMENT IV.—To determine whether the ointment was free from bacteria when procured, the outer portion was removed, and from the deep part ten tubes of glycerin agar-agar were inoculated as before. The tubes were inoculated December 1st, and have remained sterile up to the present time (January 15th).

EXPERIMENT V.—To prove that the bacteria would live in the ointment, test-tubes containing ointment were sterilized for two hours, the ointment allowed to harden in slants, and inoculated with the streptococcus erysipelatis, the staphylococcus pyogenes aureus, and the bacillus pyogenes fluorescens, the cultures used being of the fifth generation from the patient. From these tubes inoculations on glycerin agar-agar were made every third day, and cultures of the organisms introduced obtained for twenty-one days. Cultures of streptococci were obtained from the box of ointment for forty days, and the bacillus pyogenes fluorescens is still easily obtained after sixty days.

EXPERIMENT VI.—In the first stages of the broncho pneumonia, tubes were inoculated from the sputum. The staphylococcus pyogenes aureus was obtained, but the streptococcus, if present, was not found.

EXPERIMENT VII.—After the twelfth abscess, tubes of glycerin agar-agar were inoculated with blood taken at a point farthest from any abscess; no growths were obtained. Tubes were then inoc-

ulated with blood taken from near an enlarged gland, and colonies of the streptococcus appeared in twenty-four hours. Cover-slip preparations of blood from the same point showed a very few diplococci and marked leukocytosis.



The pus from the first abscess was examined microscopically. A stained cover-slip preparation (Löffler's blue) showed streptococci in short and in long entwined chains, and, throughout the specimen, solitary scattered diplococci. Some of the leukocytes contained short and entwined chains of streptococci, as shown in accompanying illustration. The cells were mostly polynuclear leukocytes, some of which showed various stages of nuclear division.

A few cells contained small stained granules of a purplish tint. No other bacteria were found by using different stains, and from Petri plates inoculated with pus only pure cultures of streptococci were obtained. The pus from each large abscess was tested in the same manner with the following result: Pure streptococci were obtained in every case, with one exception, in which a skin coccus, the staphylococcus epidermidis albus, was isolated.

SUMMARY.—The points of interest in studying this case are the following:

1. That bacteria were conveyed from one person to another through the intermediation of an ointment.

2. That the streptococcus erysipelatis lived forty days in an ointment.

3. That streptococci taken directly from the point of suppuration lived longer in ointment than those which had passed through several generations on media.

4. A typical case of erysipelas genitalium, having been caused by a streptococcus from a suppurating gland, with no known preceding lesion, tends to confirm the opinion that the streptococcus pyogenes and the streptococcus erysipelatis are identical.

5. Streptococci were found in the blood.

6. The necessity of antisepsis, even in pyemia, is shown by this case. The abscesses were due to streptococci only, and precautions were necessary to prevent mixed infection by the introduction of the staphylococcus pyogenes aureus found in the skin and sputum.

NOTE.—The condition of the child at the time of

writing points to recovery. The fourteenth abscess has just been lanced. Those that have formed within the past two or three weeks have matured slowly, and the child has gained in flesh and strength. The digestion, which has been fairly satisfactory during the entire sickness, is good. Anticipating a fatal issue, promise of autopsy was obtained, and should death finally occur, a protocol of the autopsy will be added to this article.

In conclusion the writer extends thanks to Dr. A. C. Abbott and Dr. A. A. Ghriskey for direction and verification of work.

The Medical News.

Established in 1843.

A WEEKLY MEDICAL NEWSPAPER.

Subscription, $4.00 per Annum.

The American Journal

OF THE

Medical Sciences.

Established in 1820

A MONTHLY MEDICAL MAGAZINE.

Subscription, $4.00 per Annum.

COMMUTATION RATE, $7.50 PER ANNUM.

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